

FIG. 1

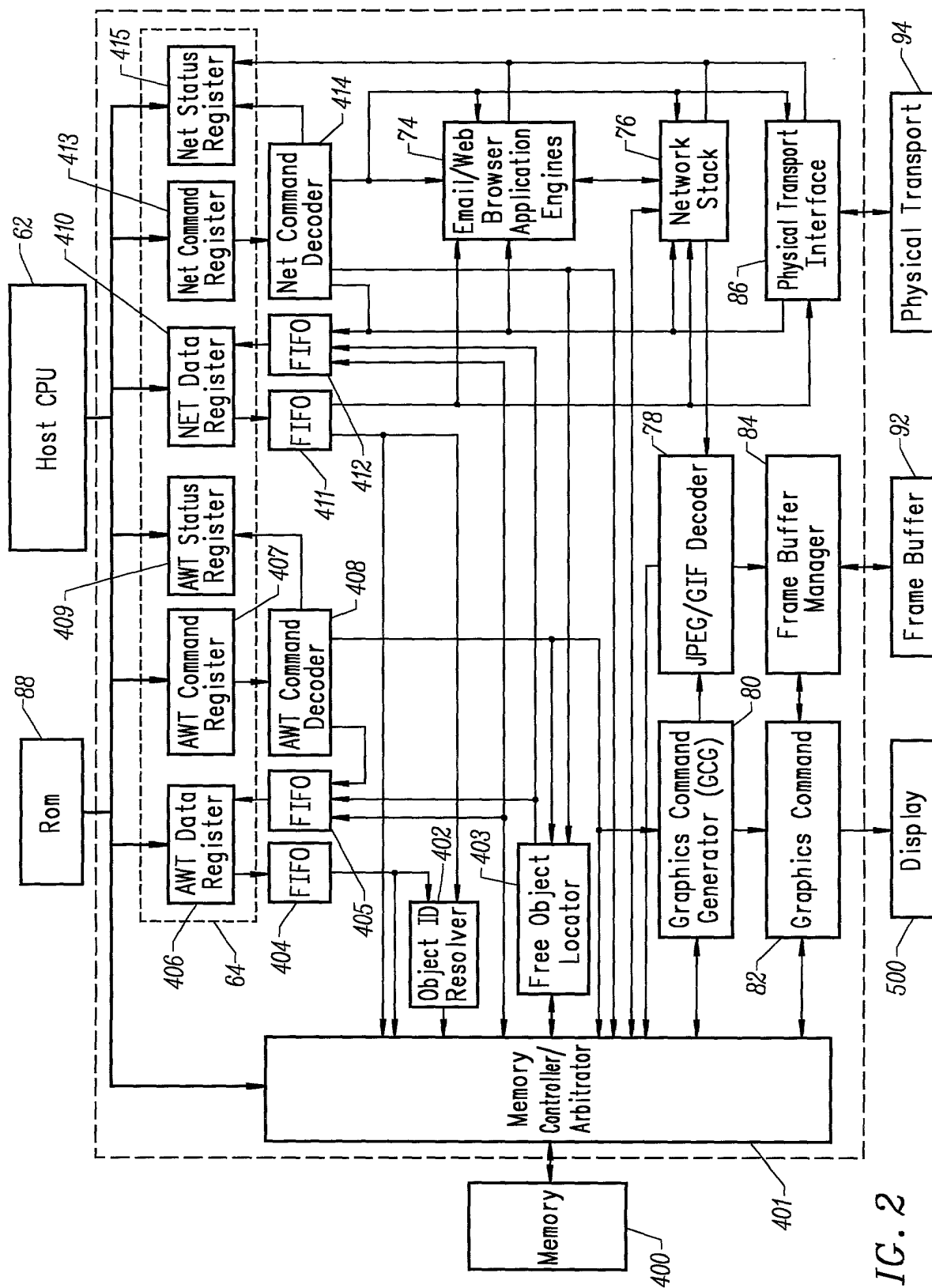
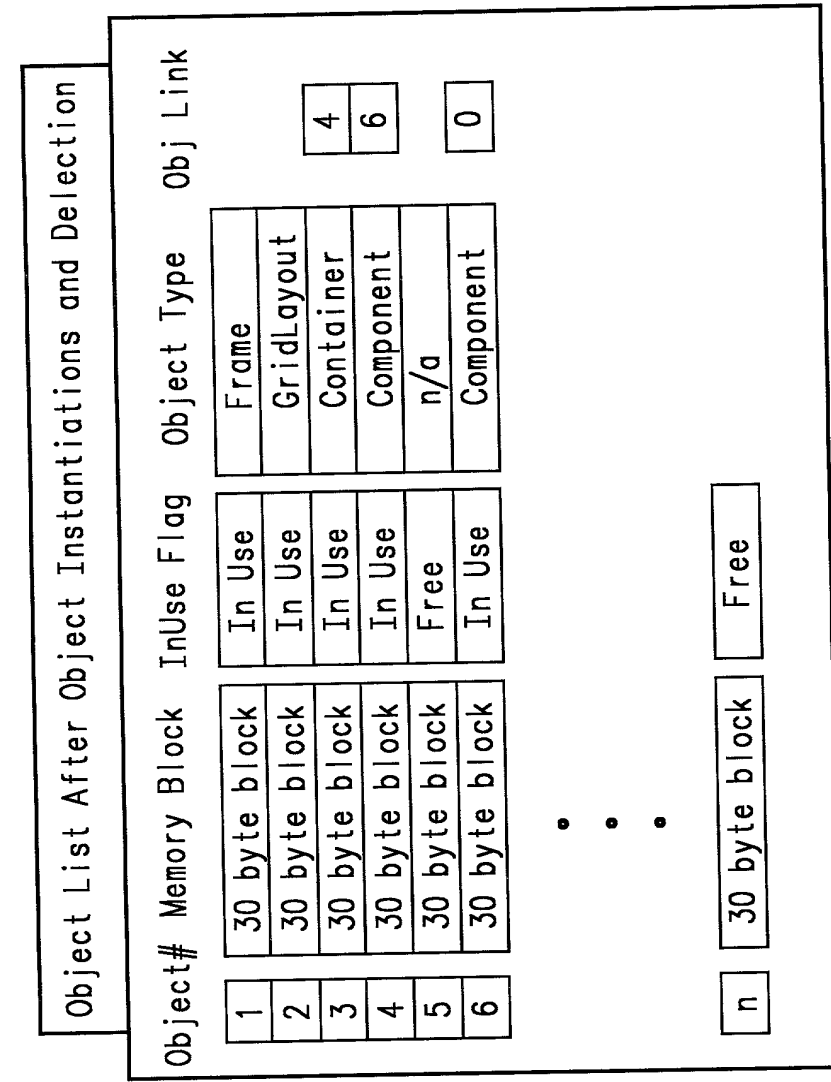


FIG. 2



**FIG. 3**

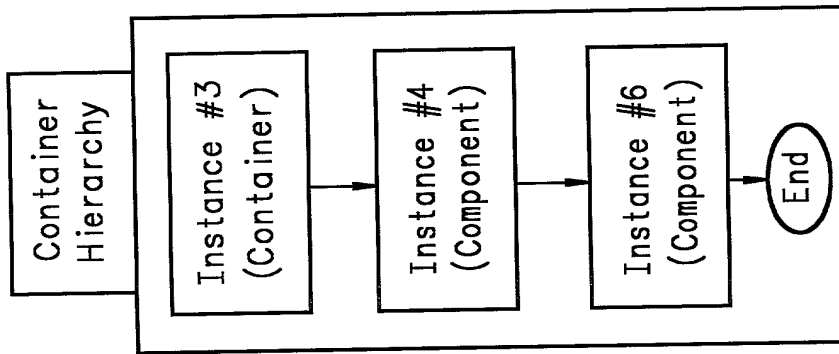
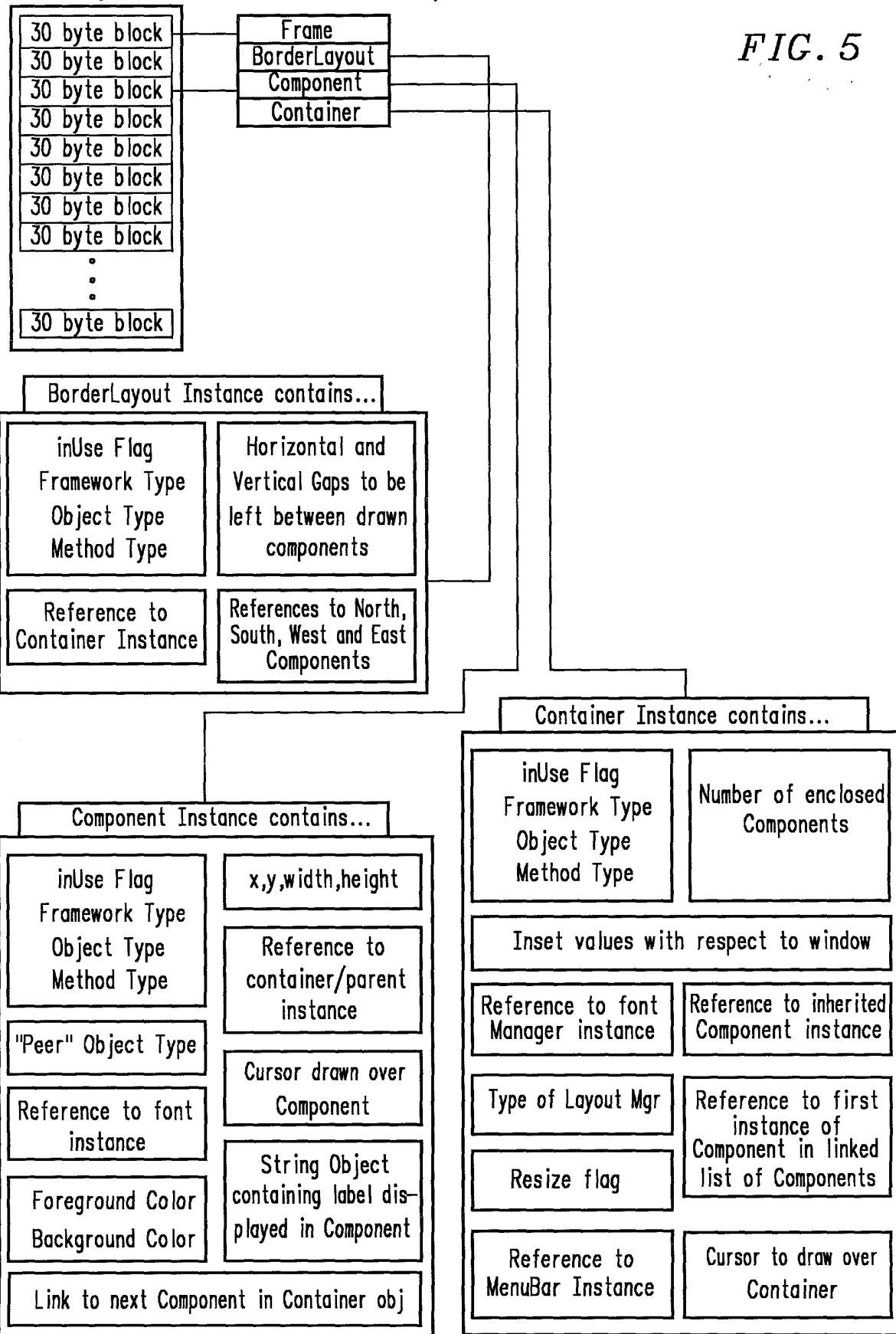


FIG. 4

FIG. 5



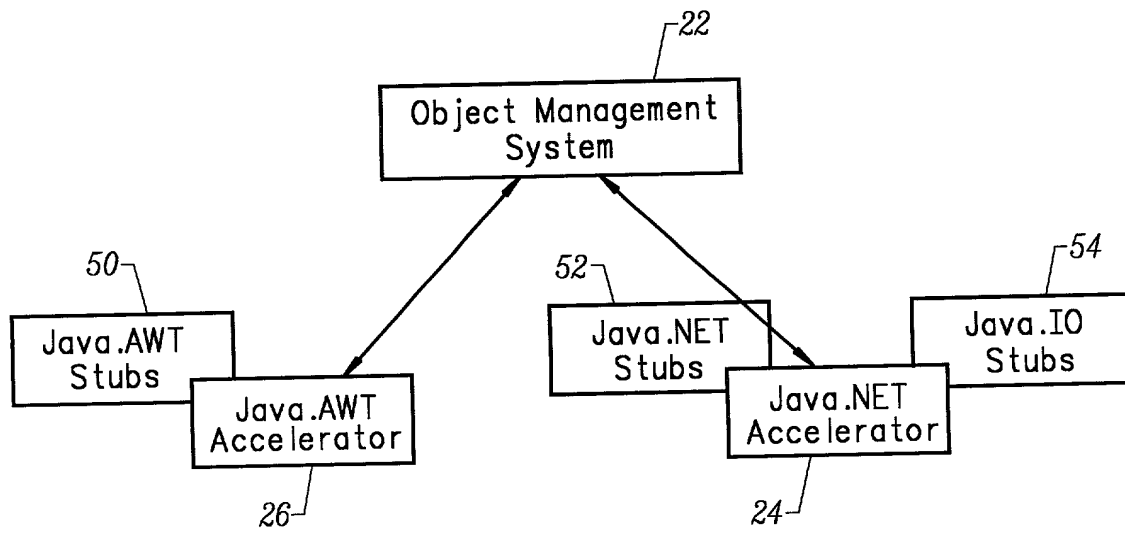


FIG. 6

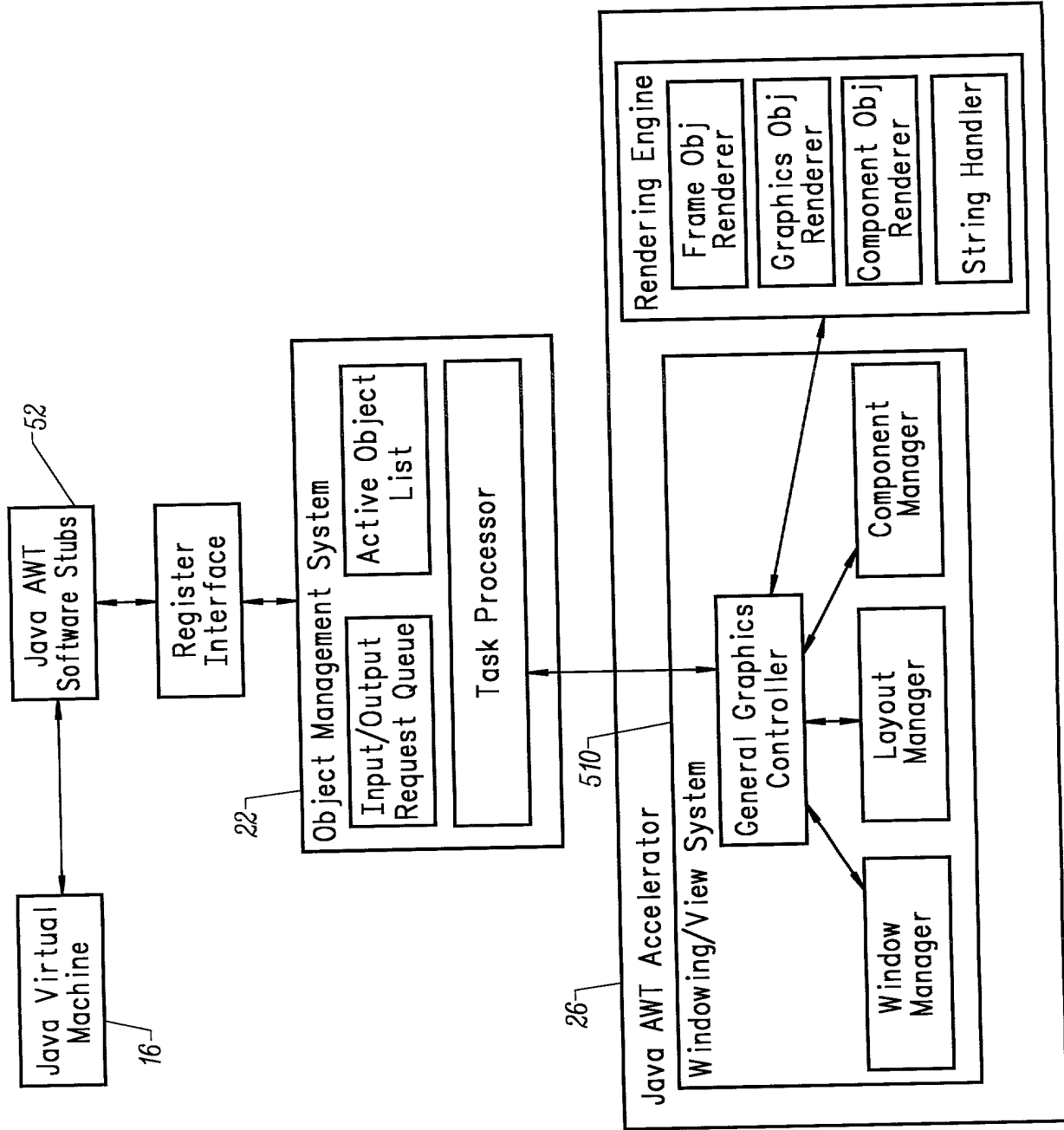


FIG. 7

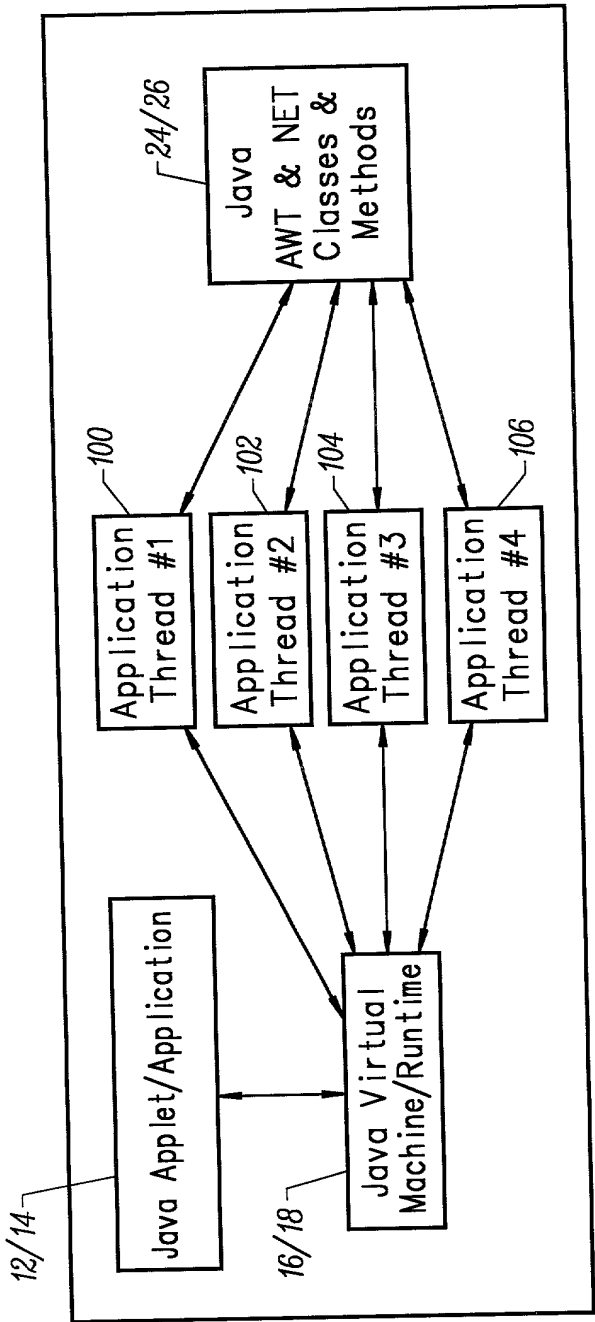


FIG. 8

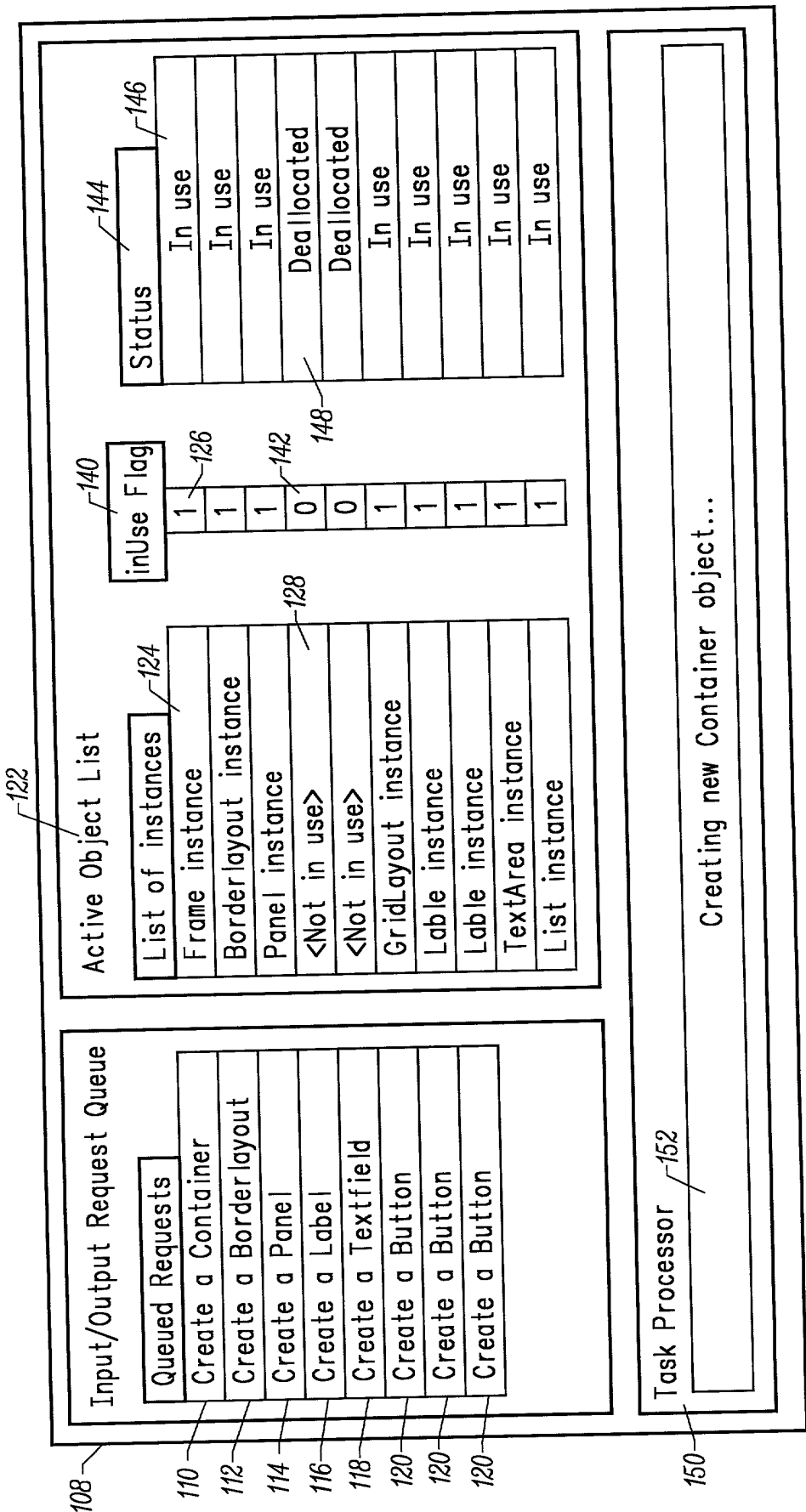
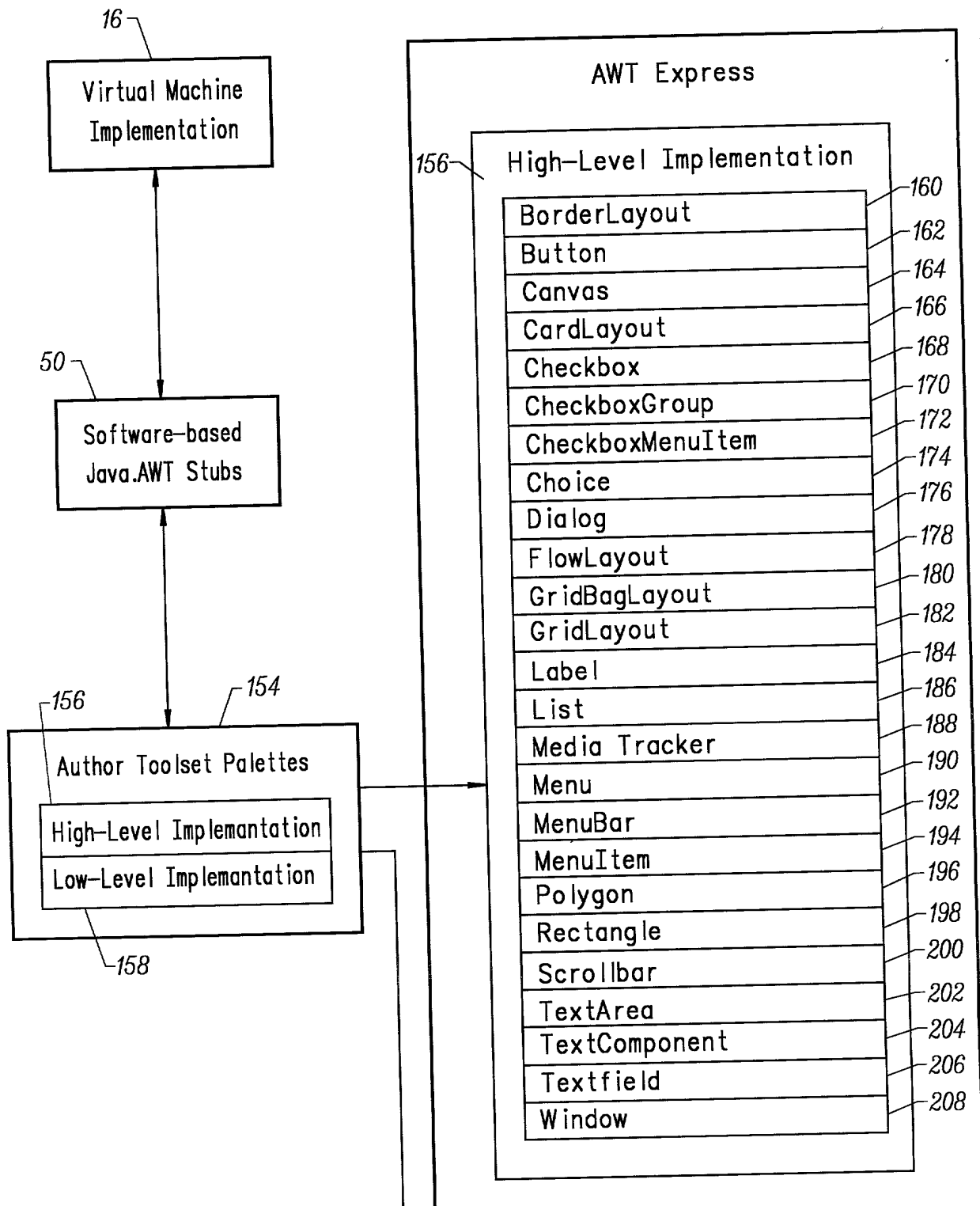


FIG. 9





See FIG. 10B

FIG. 10A

See FIG. 10A

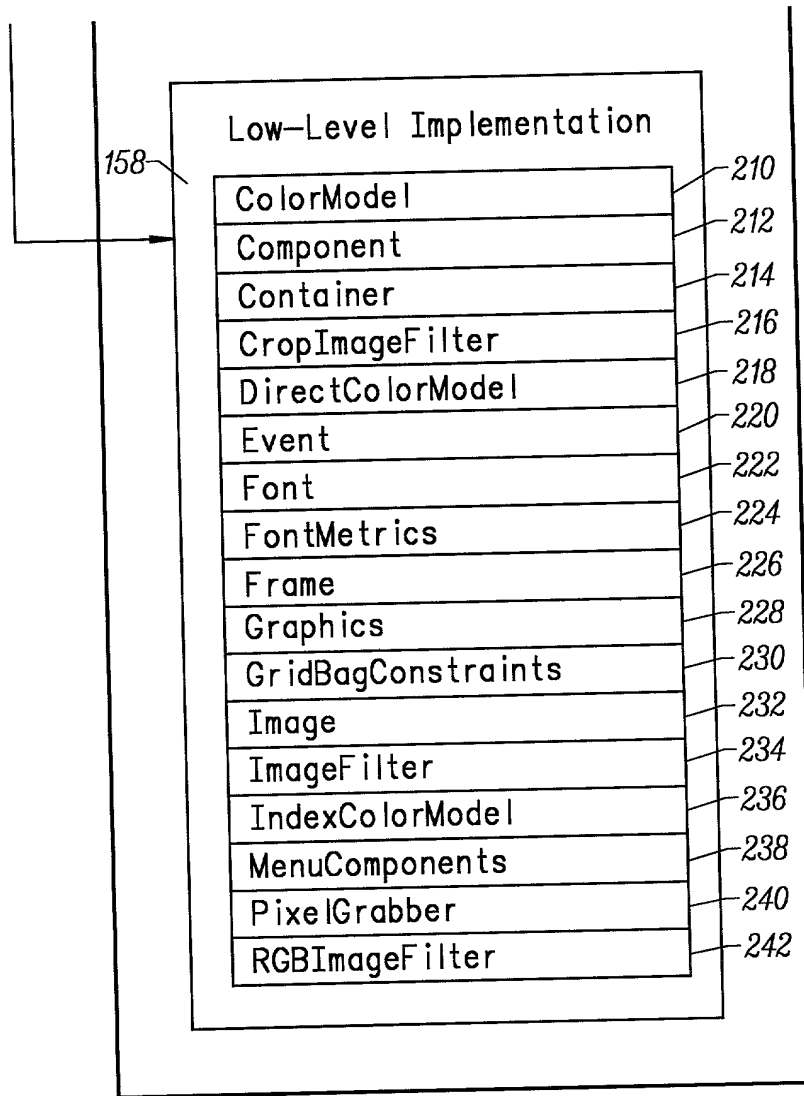


FIG. 10B

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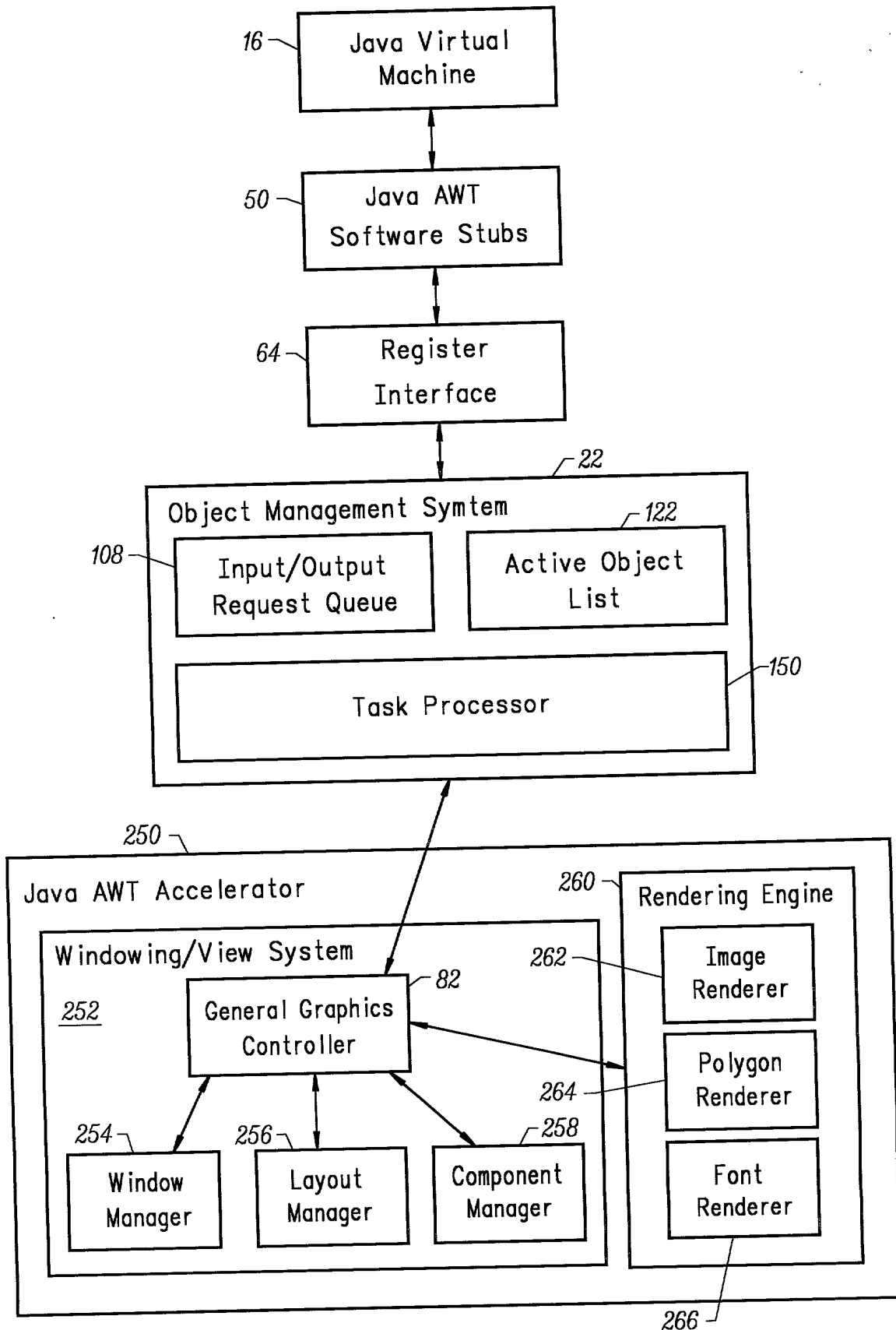


FIG. 11

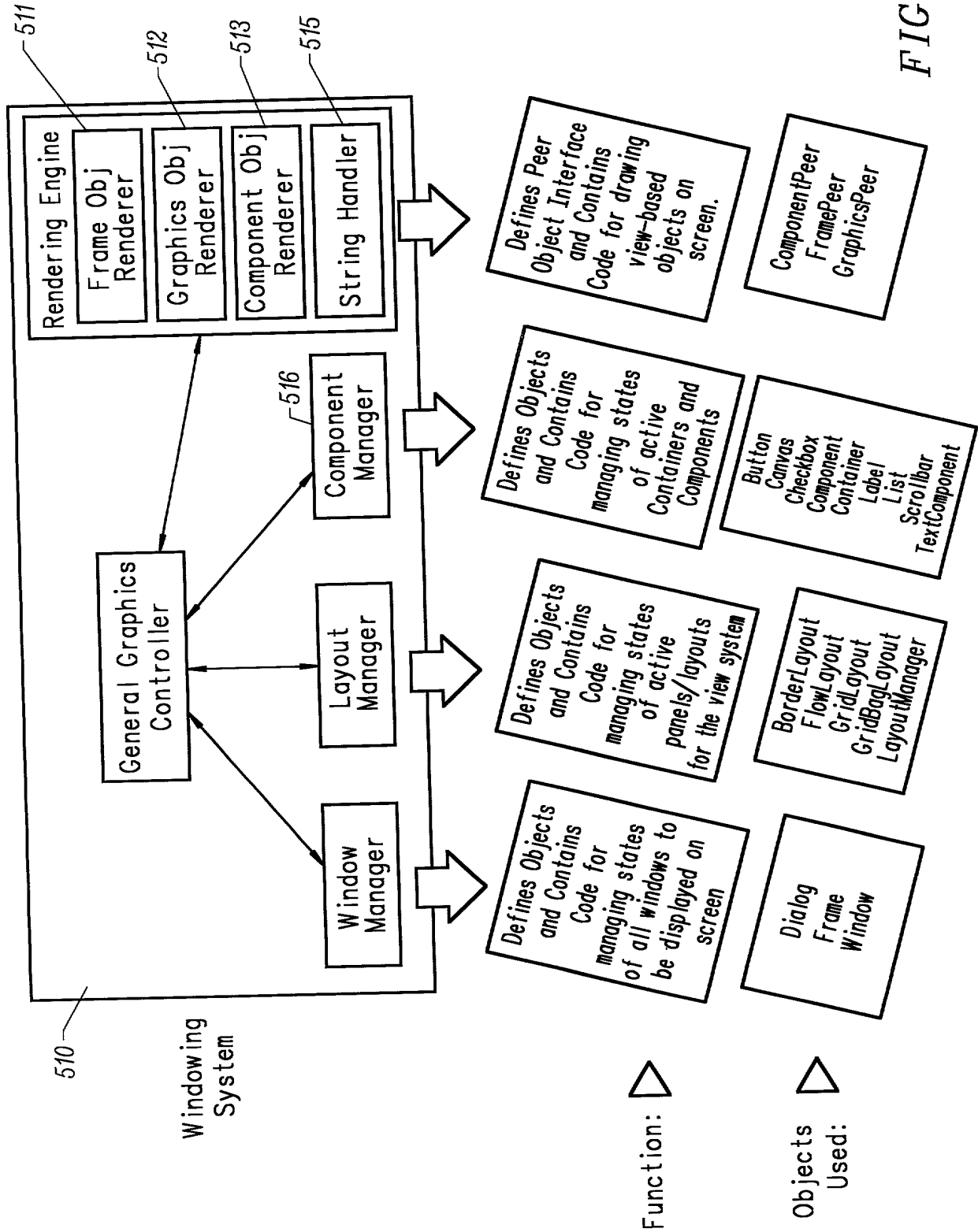
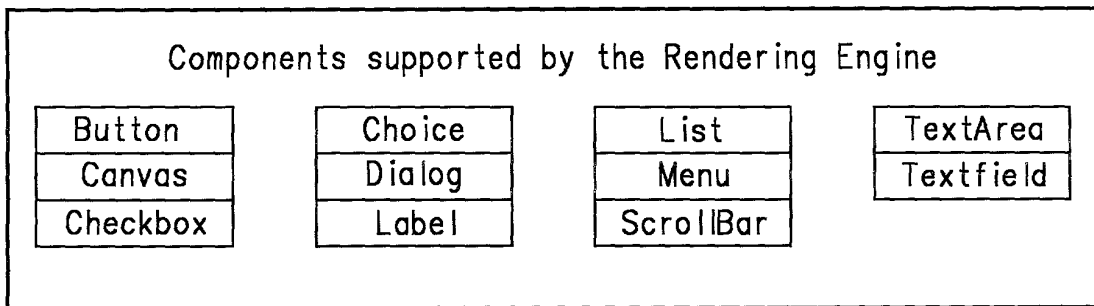
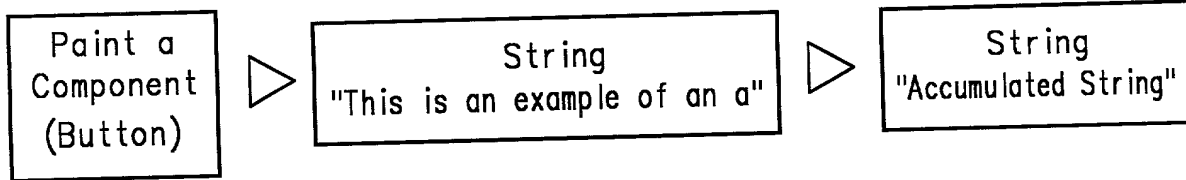


FIG. 12

*FIG. 13*

The commands:



The result:

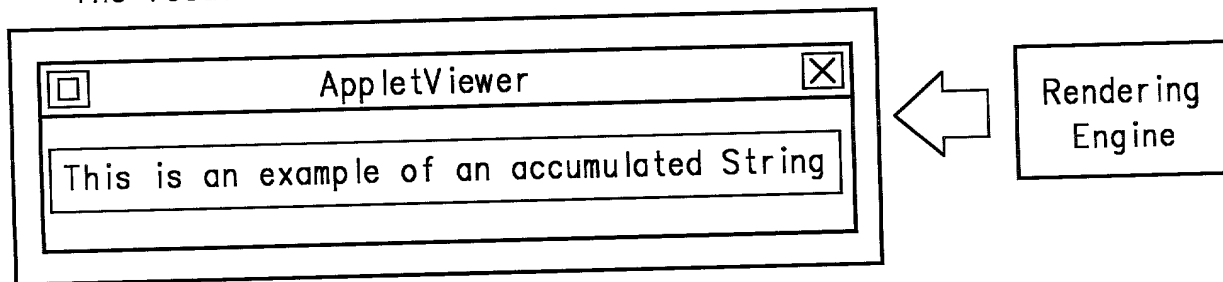


FIG. 14

Painting Methods:

clearRect
clipRect
copyArea
draw3DRect
drawArc
drawLine
drawOval
drawPolygon

drawRect
drawRoundRect
fill3DRect
fillArc
fillOval
fillPolygon
fillRect
fillRoundRect

Other Methods:

drawImage
drawString
setColor

setFont
setPaintMode
translate

FIG. 15

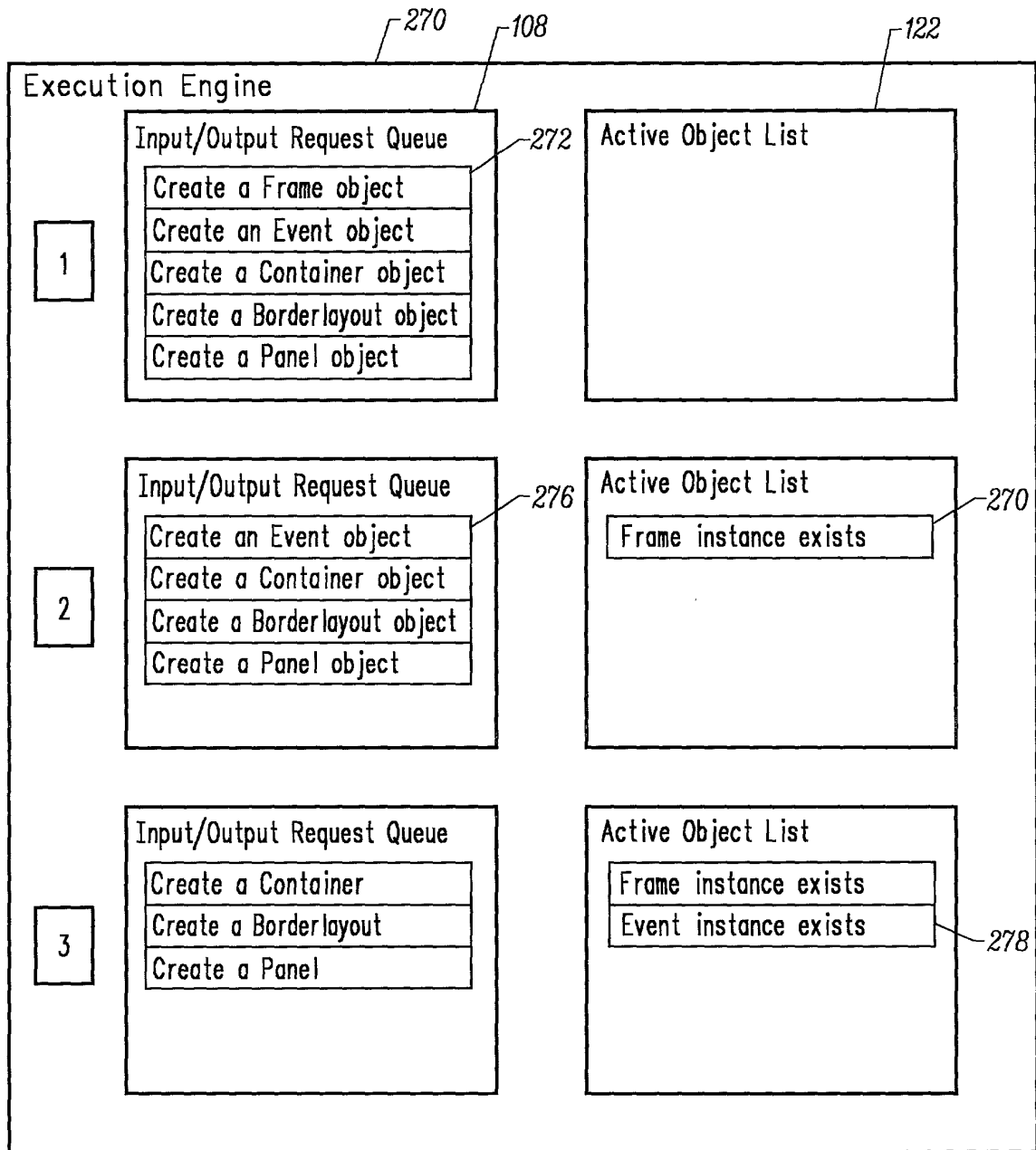


FIG. 16

## Windowing/View System

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### General Graphics Controller

- Creates Frames (i.e. windows)
- Creates Components (i.e. views)
- Passes image data to Image Renderer
- Passes text to Font Renderer
- Passes shapes to Polygon Renderer
- Allows selection (focus) for frames and components
- Deletes frames and components physically from display
- Traverses object hierarchy when a paint method in a view is called
- Handles mouse and keyboard events "passing" them down through a chain of frames and components

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### Window Manager

- Draws windows using polygon draws in the Polygon Renderer
- Manages windows so they can overlap
- Determines frames that event occurred in and notifies appropriate layout manager instance that it may need to update
- Oversees container hierarchies within each frame

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### Layout Manager (belongs to / is referenced by a frame)

- Manages container hierarchies within a frame's scope
- Determines container that event occurred in and tells it to update if necessary

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### Component Manager (belongs to/is referenced by a LayoutManager/Container)

- Manages component hierarchies within a container's scope
- Determines component that event occurred in and tells it to update if necessary

FIG. 17



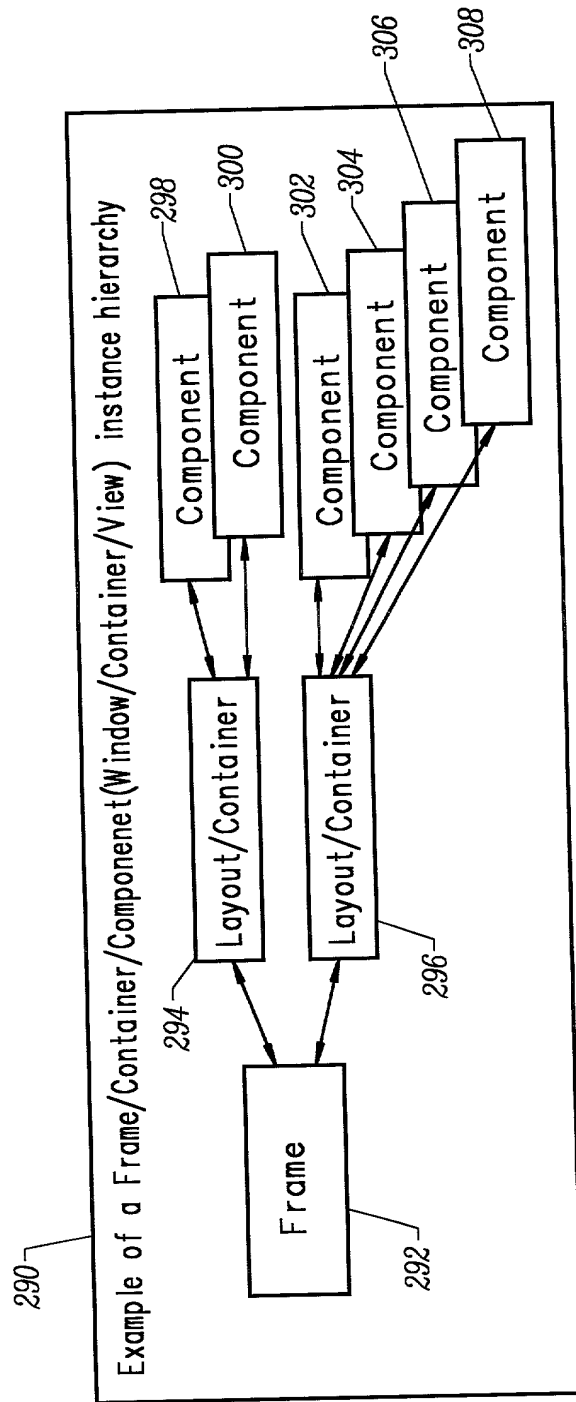


FIG. 18

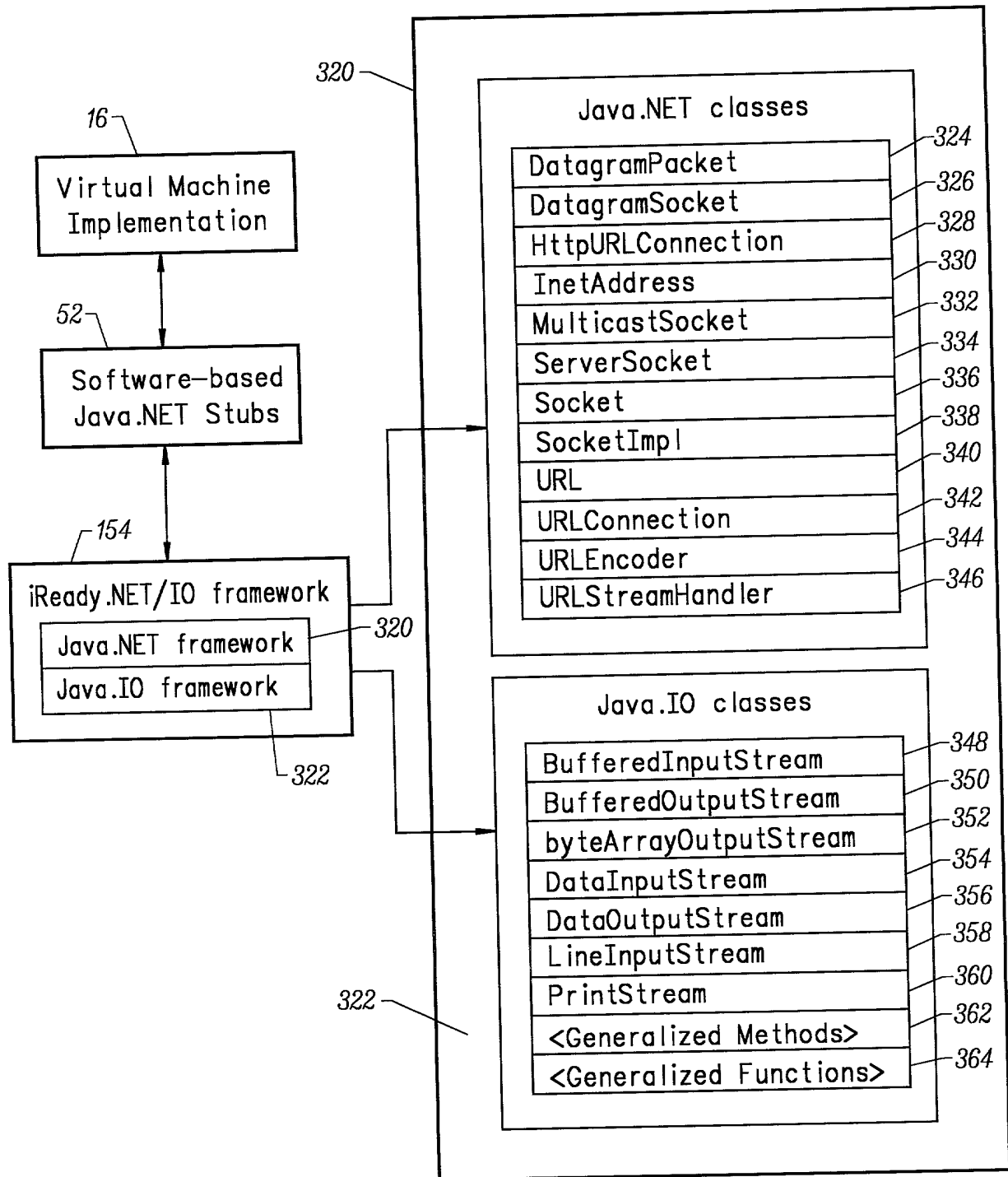


FIG. 19

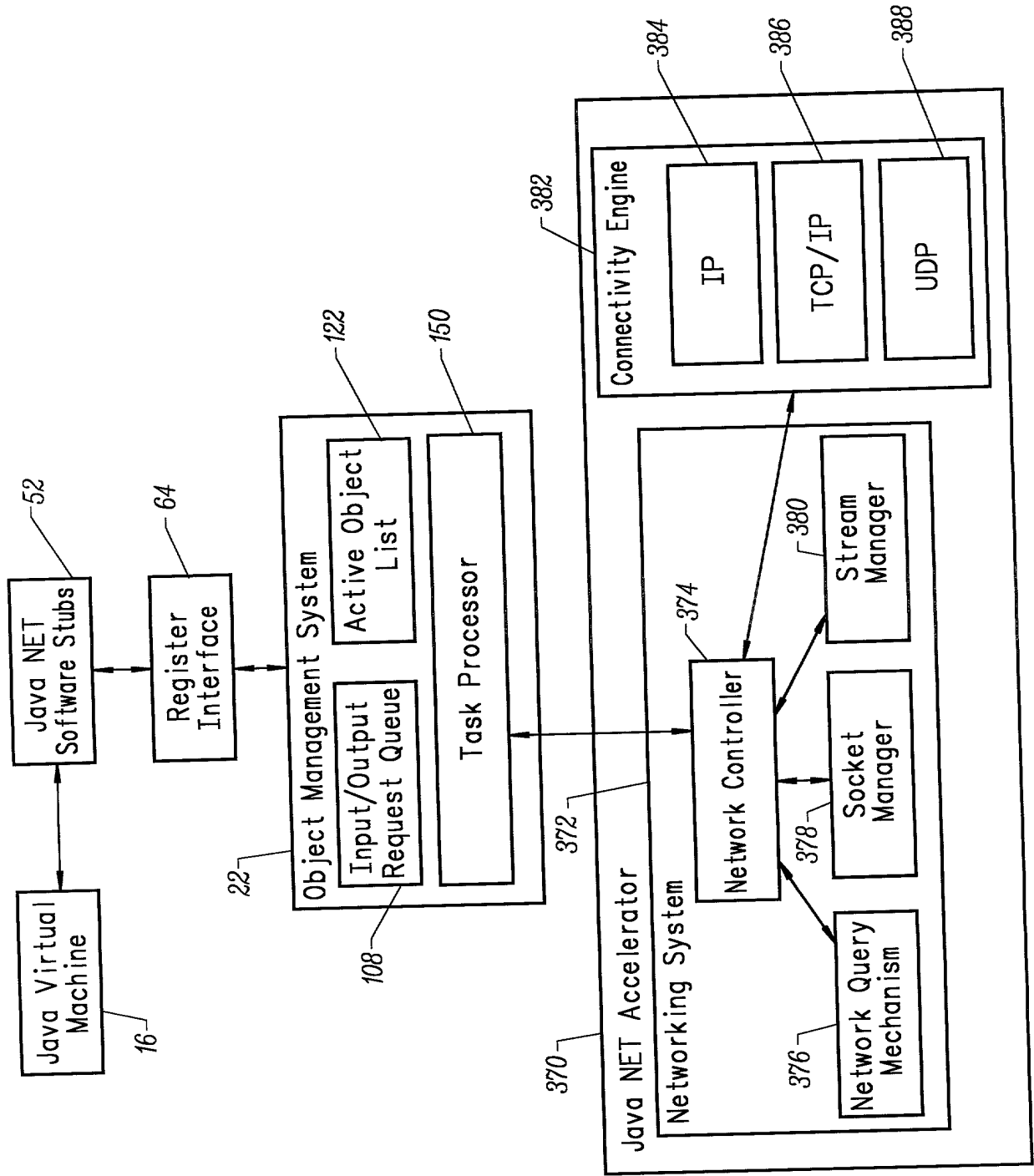


FIG. 20

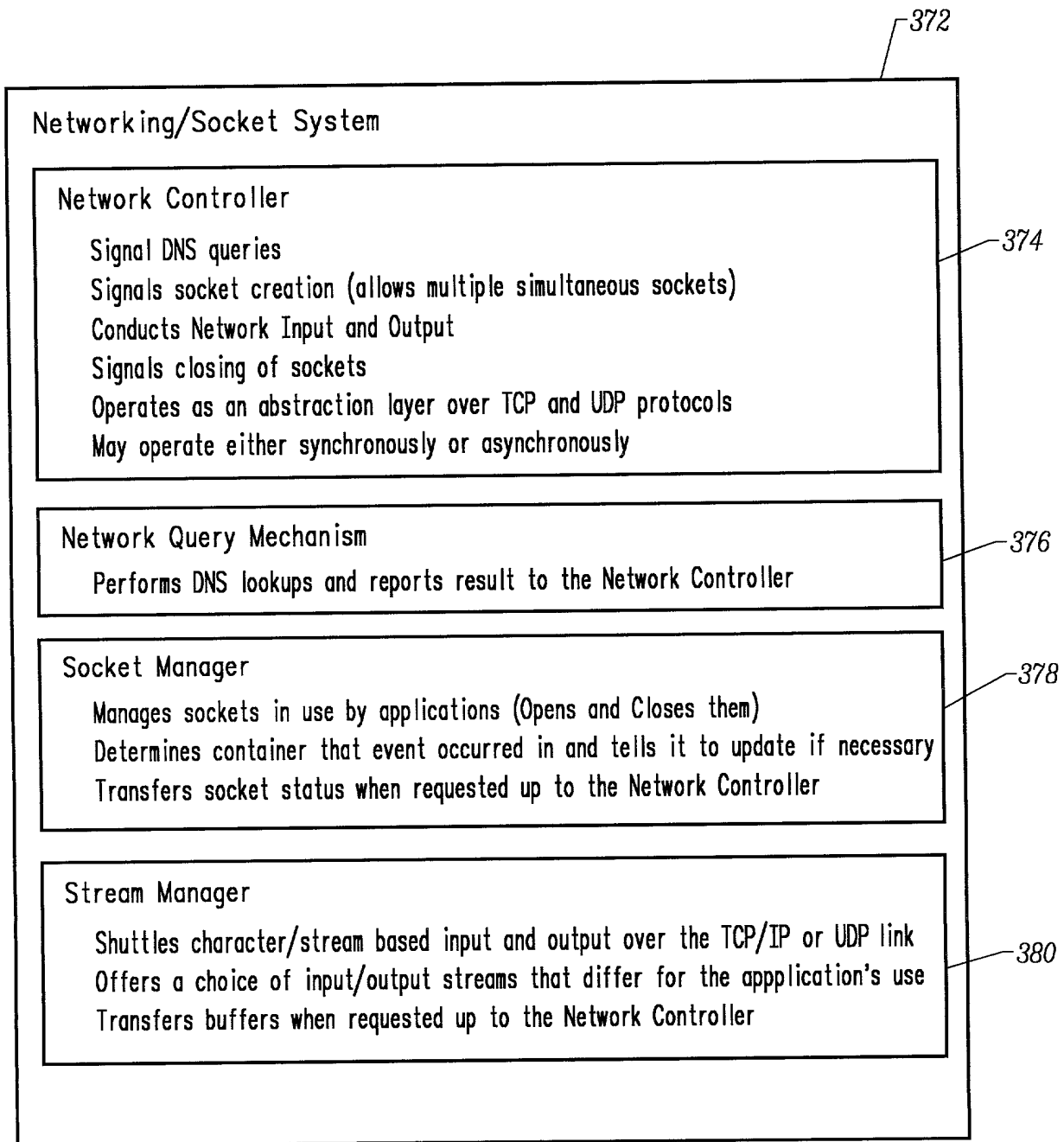


FIG. 21